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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* BRIAN THINH-VINH TRAN and GUOGEN ZHANG

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Appeal 2009-007183
Application 10/709,415
Technology Center 2100

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Decided: February 19, 2010

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*Before* LEE E. BARRETT, JOHN A. JEFFERY, and THU A. DANG, *Administrative Patent Judges*.

DANG, *Administrative Patent Judge*.

DECISION ON APPEAL

## I. STATEMENT OF CASE

Appellants appeal the Examiner's non-final rejection of claims 1-16 under 35 U.S.C. § 134(a). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

## A. INVENTION

According to Appellants, the invention relates to a "prefix encoding scheme" that "is utilized to encode node identifiers in a tree for an XML document object model" (Abstract).

## B. ILLUSTRATIVE CLAIM

Claim 1 is exemplary and reproduced below:

1. A computer-based method comprising the steps of:

a. choosing an initial base length with which to encode local identifiers,

b. assigning a value of zero as a node identifier to a root node in a logical tree,

c. sequentially assigning to descendants of a root node a local identifier having an even value and a length equal to said base length chosen in said choosing step, wherein said local identifiers are assigned in increasing value from leftmost children to rightmost children,

d. assigning node identifiers by concatenating local identifiers of all nodes along a path from a root node to a node to which a node identifier is currently being assigned, and

e. extending said initial base length when local identifier encoding combinations are exhausted before all descendants are assigned local identifiers.

## C. REJECTION

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

| | | |
|---|---|---|
| Bunton | US 5,151,697 | Sep. 29, 1992 |
| O'Neil | US 6,889,226 B2 | May 03, 2005 |
| Hu | US 7,274,671 B2 | Sep. 25, 2007 |

Claims 1-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Hu, Bunton, and O'Neil.[1]

## II. ISSUES

Have Appellants shown the Examiner erred in finding that the combination of Hu, Bunton, and O'Neil would have taught or suggested:

1) the step "c" limitation of "sequentially assigning to descendants of a root node a local identifier having an even value and a length equal to said base length chosen in said choosing step, wherein said local identifiers are assigned in increasing value from leftmost children to rightmost children" (claim 1)?

2) the step "b" limitation of "assigning a value of zero as a node identifier to a root node in a logical tree" (claim 1)?

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[1] The Appeal Brief and Examiner's Answer each state, for the grounds of rejection, that only claims 1-4, 9, and 14-16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Hu, Bunton, and O'Neil (App. Br. 3; Ans. 3). We find, from the Examiner's Answer, that claims 5-8 and 10-13 also stand rejected under 35 U.S.C. § 103(a) as unpatentable over Hu, Bunton, and O'Neil (Ans. 6-13).

3) the step "d" limitation of "assigning node identifiers by concatenating local identifiers of all nodes along a path from a root node to a node to which a node identifier is currently being assigned" (claim 1)?

## III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

### *O'Neil*

1) O'Neil constructs a data tree in which each node has an identifier representing its left-right position and ancestry (Abstract; col. 1, ll. 51-65; Fig. 6).

2) The tree has a root node 502 with identifier "1" and child nodes including, from left to right, an initial node 504, two inserted nodes 602, 604, and two initial nodes 506, 508 with identifiers "1.1," "1.2.1," "1.2.3," "1.3," and "1.5" respectively (col. 8, ll. 36-44; Fig. 6).

3) In the identifiers, the odd numerals indicate each node's left-right position and ancestry, while the even numerals only indicate an inserted node's left-right position between initial nodes (col. 8, l. 53 – col. 9, l. 13; Fig. 6).

4) "[T]he use of odd and even numbers is merely exemplary" and "any numbering scheme" is viable so long as "only values that are non-adjacent with respect to the ordering are used for the initial assignment of identifiers (so that the unused values in between the non-adjacent values are available for insertions)" (col. 9, ll. 14-38).

*Hu*

5) Hu constructs a binary tree by maximizing the difference, at each node, between the probability sums of character hits and misses (Abstract).

6) A root node forms "Layer 0" of the tree (col. 3, l. 4).

*Bunton*

7) Bunton discloses a compression system with a dictionary tree, whereby each path of the tree represents a character string that can be matched against an input string of characters (Abstract).

8) A string entry is associated with each node of the tree (col. 5, ll. 6-7).

9) The string entry of a given node is identified by concatenating all characters along the path from a root node to that given node, i.e., by concatenating string entries along the path (col. 5, ll. 7-9).

## IV. PRINCIPLES OF LAW

*Claim Interpretation*

The claims measure the invention. *See SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). "[T]he PTO gives claims their 'broadest reasonable interpretation.'" *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004) (quoting *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000)). "Moreover, limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989)).

*35 U.S.C. § 103(a)*

> Section 103 forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," and discussed circumstances in which a patent might be determined to be obvious. *Id.* at 415 (*citing Graham v. John Deere Co.*, 383 U.S. 1, 12 (1966)). The Court reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416.

## V. ANALYSIS

As to independent claim 1, Appellants argue that Hu "fails to teach any assignation of identifiers to descendants of a root node" and therefore "cannot be equated to Applicants' feature of sequentially assigning to descendants of a root node a local identifier" (App. Br. 12-13; emphasis omitted).

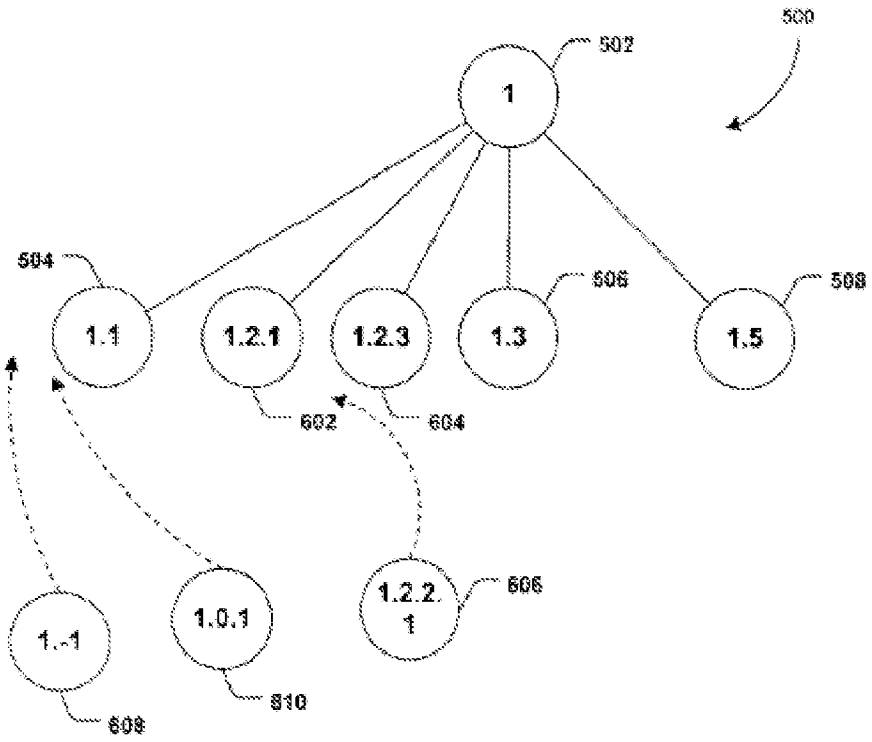
Thus, an issue we address on appeal is whether the combination of Hu, Bunton, and O'Neil would have taught or suggested the step "c" limitation of "sequentially assigning to descendants of a root node a local identifier having an even value and a length equal to said base length chosen in said choosing step, wherein said local identifiers are assigned in increasing value from leftmost children to rightmost children" (claim 1).

We begin our analysis by giving the claims their broadest reasonable interpretation. *See In re Bigio*, 381 F.3d at 1324. Furthermore, we will not read limitations into the claims from the specification. *See In re Van Geuns*, 988 F.2d at 1184.

Step "c" of claim 1 does not place any limitation on what "local identifier" means, includes, or represents, other than that the "local identifiers" are values assigned to root node descendants, have an even value and chosen base length, and increase from leftmost to rightmost children. We interpret step "c" as reading on any assignment of such values. We note that the "local identifiers" of steps "c," "d," and "e" need not have the same features because they are not linked by antecedent basis.

We find that O'Neil's data tree (shown by Figure 6 reproduced below) teaches or suggests the limitations of step "c."

O'Neil's Fig. 6



Each node of O'Neil's data tree has an identifier indicating its left-right position and ancestry (FF 1). The tree has a root node 502(1) and child nodes, which include from left to right an initial node 504(1.1), two inserted nodes 602(1.2.1), 604(1.2.3), and then two more initial nodes 506(1.3), 506(1.5) (FF 2). For clarity, we include the identifier of each node within parentheses after the node's reference numeral. The identifiers of all nodes have odd numerals that indicate their left-right position and ancestry (FF 3). The identifiers of the inserted nodes 602(1.2.1), (1.2.3) also have even numerals, which indicate their left-right position between the left initial nodes 504(1.1), 506(1.3) (FF 3).

A skilled artisan would have understood the identifier end portions (underlined herein) of the initial nodes 504(1.1), 506(1.3), 506(1.5) as being values that are assigned to descendants of the root node 502(1), have the same chosen base length of one numeral, and increase from leftmost to rightmost children, as required by step "c."

The identifier end portions of the initial nodes 504(1.1), 506(1.3), 506(1.5) are not even values, as also required by step "c". However, O'Neil's use of odd and even numbers is "merely exemplary" and "any numbering scheme" is viable so long as "only values that are non-adjacent with respect to the ordering are used for the initial assignment of identifiers (so that the unused values in between the non-adjacent values are available for insertions)" (FF 4). Thus, the identifier end portions of the initial nodes 504(1.1), 506(1.3), 506(1.5) can alternatively have even values (e.g., respectively 0, 2, and 4).

Accordingly, Appellants have not shown the Examiner erred in finding that the combination of Hu, Bunton, and O'Neil would have taught or suggested step "c" of claim 1.

Appellants acknowledge that a root node of Hu's binary tree "belongs to 'layer 0' or the top layer," but argue that Hu makes "no mention of assigning a zero value to the node identifier of the root" (App. Br. 10; emphasis omitted).

Thus, another issue we address on appeal is whether the combination of Hu, Bunton, and O'Neil would have taught or suggested the step "b" limitation of "assigning a value of zero as a node identifier to a root node in a logical tree" (claim 1).

Step "b" does not place any limitation on what "node identifier" means, includes, or represents, other than that it is assigned as a zero value to a root node. We therefore interpret step "b" as reading on any assignment of a zero value to a root node. We note that the "node identifiers" of steps "b" and "d" need not have the same features because they are not linked by antecedent basis.

Hu discloses a binary tree that maximizes the difference, at each node, between the probability sums of character hits and misses (FF 5). As acknowledged by Appellants, the root node of Hu's binary tree belongs to "Layer 0" (FF 6). A skilled artisan would have therefore understood "Layer 0" as being a zero value assigned to a root node, as required by step "b."

Accordingly, Appellants have not shown the Examiner erred in finding that the combination of Hu, Bunton, and O'Neil would have taught or suggested step "b" of claim 1.

Appellants acknowledge that "the concatenation aspect mentioned in Bunton corresponds to the concatenation of characters while traversing a path from the root node to the related node," but argue that it "relates to the concatenation of alphabets and NOT, as the Examiner suggests, concatenation of codes" (App. Br. 14; emphasis omitted).

Thus, another issue we address on appeal is whether the combination of Hu, Bunton, and O'Neil would have taught or suggested the step "d" limitation of "assigning node identifiers by concatenating local identifiers of all nodes along a path from a root node to a node to which a node identifier is currently being assigned" (claim 1).

Contrary to Appellants' argument, step "d" neither precludes a concatenation of characters/alphabets nor requires a concatenation of codes. Rather, step "d" merely recites "assigning node identifiers by concatenating local identifiers." In doing so, step "d" does not place any limitation on what "node identifiers" and "local identifiers" mean, include, or represent, other than that a "node identifier" is assigned by concatenating the "local identifiers" along a path from a root node to that particular "node identifier." We therefore interpret step "d" as reading on the assignment of any "identifier" to a node (e.g., assignment of character/s) by concatenating other "identifiers" along a path from a root node to that node. We note that the "node identifiers" and "local identifiers" of steps "b" through "e" need not have the same respective features because they are not linked by antecedent basis.

Bunton discloses a dictionary tree in which each path represents a character string that may be matched against an input string of characters (FF 7). As acknowledged by Appellants, each node has an associated string

entry that is identified by concatenating all characters along the path from a root node to that given node, i.e., by concatenating string entries along the path (FF 8-9). A skilled artisan would have understood Bunton's string entries as being "identifiers" (e.g., associated character/s) that are assigned to a node by concatenating other such "identifiers" along a path from a root node to that node, as required by step "d."

We note that the skilled artisan would have also understood O'Neil's initial nodes 504(1.1), 506(1.3), 508(1.5) as being constructed by concatenating their identifier end portions (underlined) with the identifier "1" of the root node 502(1).

Accordingly, Appellants have not shown that the Examiner erred in finding that the combination of Hu, Bunton, and O'Neil would have taught or suggested step "d" of claim 1.

Thus, for the above reasons, Appellants have not shown that the Examiner erred in rejecting claim 1. We therefore affirm the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Hu, Bunton, and O'Neil. As Appellants do not provide separate arguments for independent claims 9 and 16, those claims, as well as claims 2-8 and 10-15 depending from claims 1, 9, and 16 respectively, fall with representative claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii). We therefore also affirm the rejection of claims 2-16 under 35 U.S.C. § 103(a) as being unpatentable over Hu, Bunton, and O'Neil.

## VI. CONCLUSIONS

Appellants have not shown that the Examiner erred in finding that claims 1-16 are unpatentable over the teachings of Hu, Bunton, and O'Neil.

## VII. DECISION

The Examiner's decision rejecting claims 1-16 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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